



#7

ISIS4804.ST25.txt

SEQUENCE LISTING

<110> Manoharan, Muthiah  
Maier, Martin A.  
Prakash, Thazha P.  
Rajeev, Kallanthottathil Gopalan

<120> Nuclease Resistant Chimeric Oligonucleotides

<130> ISIS-4804

<140> 09/996,292

<141> 2001-11-28

<160> 55

<170> PatentIn version 3.1

<210> 1

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Completely synthetic sequence

<220>

<221> misc\_feature

<222> (1)..(20)

<223> All P=S

<220>

<221> misc\_feature

<222> (1)..(1)

<223> N= L-Thymidine

<220>

<221> misc\_feature

<222> (20)..(20)

<223> N= L-Thymidine

<400> 1

ngcatcccc aggccaccan

20

<210> 2

<211> 17

<212> DNA

<213> Artificial Sequence

<220>

<223> Completely synthetic sequence

<220>

<221> misc\_feature

<222> (1)..(17)

<223> All P=S

<220>

<221> misc\_feature

<222> (1)..(1)

<223> N= L-Thymidine

<220>

<221> misc\_feature

<222> (2)..(3)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (15)..(15)  
<223> N= 2'-O-MOE A

<220>  
<221> misc\_feature  
<222> (16)..(16)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (17)..(17)  
<223> N= L-Thymidine

<400> 2  
nnncgctgtg atgcnnn

17

<210> 3  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (1)..(20)  
<223> All P=S

<220>  
<221> misc\_feature  
<222> (1)..(1)  
<223> N= L-Thymidine

<220>  
<221> misc\_feature  
<222> (2)..(3)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (13)..(14)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (15)..(15)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (16)..(16)  
<223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (17)..(17)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (18)..(19)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= L-Thymidine

<400> 3  
 nnngtcatcg ctnnnnnnnn

20

<210> 4  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<400> 4  
 tgcacccccc aggccacccat

20

<210> 5  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (1)..(1)  
 <223> N= L-Thymidine

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= L-Thymidine

<400> 5  
 ngcatccccc aggccaccan

20

<210> 6  
 <211> 17  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(17)  
 <223> All P=S

<400> 6  
 tcccgtgtg atgcatt

17

<210> 7  
 <211> 17  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(17)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (1)..(1)  
 <223> N= L-Thymidine

<220>  
 <221> misc\_feature  
 <222> (2)..(3)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (15)..(15)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (17)..(17)  
 <223> N= L-Thymidine

<400> 7  
 nnncgctgtg atgcnnn

17

<210> 8  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (1)..(20)  
<223> All P=S

<220>  
<221> misc\_feature  
<222> (1)..(1)  
<223> N= L-Cytidine

<220>  
<221> misc\_feature  
<222> (2)..(2)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (3)..(3)  
<223> N= 2'-O-MOE A

<220>  
<221> misc\_feature  
<222> (4)..(4)  
<223> N= 2'-O-MOE G

<220>  
<221> misc\_feature  
<222> (5)..(5)  
<223> N= 2'-O-MOE A

<220>  
<221> misc\_feature  
<222> (16)..(16)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (17)..(17)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (18)..(18)  
<223> N= 2'-O-MOE G

<220>  
<221> misc\_feature  
<222> (19)..(19)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (20)..(20)  
<223> N= 2'-O-MOE 5meC

<400> 8  
nnnnnttcca cactcnnnnn

<210> 9  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (1)..(20)  
<223> All P=S

<220>  
<221> misc\_feature  
<222> (1)..(1)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (2)..(2)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (3)..(3)  
<223> N= 2'-O-MOE A

<220>  
<221> misc\_feature  
<222> (4)..(4)  
<223> N= 2'-O-MOE G

<220>  
<221> misc\_feature  
<222> (5)..(5)  
<223> N= 2'-O-MOE A

<220>  
<221> misc\_feature  
<222> (16)..(16)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (17)..(17)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (18)..(18)  
<223> N= 2'-O-MOE G

<220>  
<221> misc\_feature  
<222> (19)..(19)  
<223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= L-Cytidine

<400> 9  
 nnnnnttcca cactcnnnnn

20

<210> 10  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (1)..(1)  
 <223> N= L-Cytidine

<220>  
 <221> misc\_feature  
 <222> (2)..(2)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (3)..(3)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (4)..(4)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (5)..(5)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (17)..(17)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature

<222> (18)..(18)  
<223> N= 2'-O-MOE G

<220>  
<221> misc\_feature  
<222> (19)..(19)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (20)..(20)  
<223> N= L-Cytidine

<400> 10  
nnnnnttcca cactcnnnnn

20

<210> 11  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (1)..(20)  
<223> All P=S

<220>  
<221> misc\_feature  
<222> (10)..(10)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (11)..(11)  
<223> N= 2'-O-MOE A

<220>  
<221> misc\_feature  
<222> (12)..(13)  
<223> N= 2'-O-MOE G

<220>  
<221> misc\_feature  
<222> (14)..(14)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (16)..(16)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (17)..(18)  
<223> N= 2'-O-MOE 5meU



<220>  
<221> misc\_feature  
<222> (19)..(19)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (20)..(20)  
<223> N= L-Adenosine

<400> 11  
ccggtaccn nnnntnnnnn

20

<210> 12  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (1)..(20)  
<223> All P=S

<220>  
<221> misc\_feature  
<222> (1)..(1)  
<223> N= L-Cytidine

<220>  
<221> misc\_feature  
<222> (10)..(10)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (11)..(11)  
<223> N= 2'-O-MOE A

<220>  
<221> misc\_feature  
<222> (12)..(13)  
<223> N= 2'-O-MOE G

<220>  
<221> misc\_feature  
<222> (14)..(14)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (16)..(16)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (17)..(18)  
<223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (19)..(19)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= L-Adenosine

<400> 12  
 ncggtacccn nnnntnnnnn

20

<210> 13  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (9)..(9)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (10)..(10)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (11)..(11)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (12)..(12)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= L-Cytidine

<400> 13  
 ctagattcnn nnctctcgtn

20

<210> 14  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (1)..(20)  
<223> All P=S

<220>  
<221> misc\_feature  
<222> (1)..(1)  
<223> N= L-Cytidine

<220>  
<221> misc\_feature  
<222> (9)..(9)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (10)..(10)  
<223> N= 2'-O-MOE A

<220>  
<221> misc\_feature  
<222> (11)..(11)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (12)..(12)  
<223> N= 2'-O-MOE A

<400> 14  
ntagattcnn nnctctcgtc

20

<210> 15  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (1)..(20)  
<223> All P=S

<220>  
<221> misc\_feature  
<222> (1)..(1)  
<223> N= L-Cytidine

<220>  
<221> misc\_feature  
<222> (9)..(9)  
<223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (10)..(10)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (11)..(11)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (12)..(12)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= L-Cytidine

<400> 15  
 ntagattcnn nnctctcgtn

20

<210> 16  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (1)..(1)  
 <223> N= 2,-3'-Dideoxycytidine

<220>  
 <221> misc\_feature  
 <222> (2)..(2)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (3)..(3)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (4)..(4)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (5)..(5)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (17)..(17)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (18)..(18)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (19)..(19)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= 2, 3'-Dideoxycytidine

<400> 16  
 nnnnnttcca cactcnnnnn

20

<210> 17  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (10)..(10)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (11)..(11)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (12)..(13)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature

<222> (14)..(14)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (16)..(16)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (17)..(18)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (19)..(19)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (20)..(20)  
<223> N= 2',-3'-Dideoxyadenosine

<400> 17  
ccggtaccn nnnntnnnnn

20

<210> 18  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (1)..(20)  
<223> All P=S

<220>  
<221> misc\_feature  
<222> (1)..(1)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (2)..(2)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (3)..(3)  
<223> N= 2'-O-MOE A

<220>  
<221> misc\_feature  
<222> (4)..(4)  
<223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (5)..(5)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (17)..(17)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (18)..(18)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (19)..(19)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= 2'-3'-Didehydro-2', 3'-dideoxycytidine

<400> 18  
 nnnnnttcca cactcnnnnn

20

<210> 19  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (10)..(10)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (11)..(11)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (12)..(13)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (14)..(15)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (17)..(18)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (19)..(19)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= 2',-3'-Didehydro-2',3'-dideoxyadenosine

<400> 19  
 ccggtacccn nnnnnnnnnn

20

<210> 20  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (1)..(1)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (2)..(2)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (3)..(3)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature



<222> (4)..(4)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (5)..(5)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (17)..(17)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (18)..(18)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (19)..(19)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= 2'-3'-Dideoxy-3'-fluorocytidine

<400> 20  
 nnnnnttcca cactcnnnnn

20

<210> 21  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (1)..(1)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (2)..(2)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (3)..(3)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (4)..(4)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (5)..(5)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (17)..(17)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (18)..(18)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (19)..(19)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= 3'-Deoxy-2'-O-[2-(methoxy)ethyl]-5-methylcytidine

<400> 21  
 nnnnnttcca cactcnnnnn

20

<210> 22  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (1)..(1)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (2)..(2)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (3)..(3)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (4)..(4)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (5)..(5)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (17)..(17)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (18)..(18)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (19)..(19)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= 3-hydroxy-2-pyrrolidinemethanol

<400> 22  
 nnnnnttcca cactcnnnnn

20

<210> 23  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature

<222> (1)..(21)  
<223> All P=S

<220>  
<221> misc\_feature  
<222> (1)..(1)  
<223> N= 3-hydroxy-2-pyrrolidinemethanol

<220>  
<221> misc\_feature  
<222> (2)..(2)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (3)..(3)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (4)..(4)  
<223> N= 2'-O-MOE A

<220>  
<221> misc\_feature  
<222> (5)..(5)  
<223> N= 2'-O-MOE G

<220>  
<221> misc\_feature  
<222> (6)..(6)  
<223> N= 2'-O-MOE A

<220>  
<221> misc\_feature  
<222> (17)..(17)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (18)..(18)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (19)..(19)  
<223> N= 2'-O-MOE G

<220>  
<221> misc\_feature  
<222> (20)..(20)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (21)..(21)  
<223> N= 3-hydroxy-2-pyrrolidinemethanol

<400> 23  
nnnnnnttcc acactcnnnn n

21

<210> 24  
<211> 21  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (1)..(21)  
<223> All P=S

<220>  
<221> misc\_feature  
<222> (10)..(10)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (11)..(11)  
<223> N= 2'-O-MOE A

<220>  
<221> misc\_feature  
<222> (12)..(13)  
<223> N= 2'-O-MOE G

<220>  
<221> misc\_feature  
<222> (14)..(15)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (16)..(16)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (17)..(18)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (19)..(19)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (21)..(21)  
<223> N= 3-hydroxy-2-pyrrolidinemethanol

<400> 24  
ccggtaccn nnnnnnnnna n

21

<210> 25  
<211> 22  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (1)..(22)  
<223> All P=S

<220>  
<221> misc\_feature  
<222> (1)..(1)  
<223> N= 3-hydroxy-2-pyrrolidinemethanol

<220>  
<221> misc\_feature  
<222> (11)..(11)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature  
<222> (12)..(12)  
<223> N= 2'-O-MOE A

<220>  
<221> misc\_feature  
<222> (13)..(14)  
<223> N= 2'-O-MOE G

<220>  
<221> misc\_feature  
<222> (15)..(16)  
<223> N= 2'-O-MOE 5 meU

<220>  
<221> misc\_feature  
<222> (17)..(17)  
<223> N= 2'-O-MOE 5 meC

<220>  
<221> misc\_feature  
<222> (18)..(19)  
<223> N= 2'-O-MOE 5 meU

<220>  
<221> misc\_feature  
<222> (20)..(20)  
<223> N= 2'-O-MOE 5 meC

<220>  
<221> misc\_feature  
<222> (22)..(22)  
<223> N= 3-hydroxy-2-pyrrolidinemethanol

<400> 25  
nccggtaccc nnnnnnnnnn an

<210> 26  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (1)..(1)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (2)..(2)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (3)..(3)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (4)..(4)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (5)..(5)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (17)..(17)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (18)..(18)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (19)..(19)  
 <223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (20)..(20)  
<223> N= 1-[2-hydroxy-1-[2-hydroxy-1-(hydroxymethyl)ethoxy]ethylcytosine

<400> 26  
nnnnnttcca cactcnnnnn

20

<210> 27  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (1)..(20)  
<223> All P=S

<220>  
<221> misc\_feature  
<222> (1)..(1)  
<223> N= 1-[2-hydroxy-1-[2-hydroxy-1-(hydroxymethyl)ethoxy]ethylcytosine

<220>  
<221> misc\_feature  
<222> (2)..(2)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (3)..(3)  
<223> N= 2'-O-MOE A

<220>  
<221> misc\_feature  
<222> (4)..(4)  
<223> N= 2'-O-MOE G

<220>  
<221> misc\_feature  
<222> (5)..(5)  
<223> N= 2'-O-MOE A

<220>  
<221> misc\_feature  
<222> (16)..(16)  
<223> N= 2'-O-MOE 5meU

<220>  
<221> misc\_feature  
<222> (17)..(17)  
<223> N= 2'-O-MOE 5meC

<220>  
<221> misc\_feature



<222> (18)..(18)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (19)..(19)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= 1-[2-hydroxy-1-[2-hydroxy-1-(hydroxymethyl)ethoxy]ethylcytosine

<400> 27  
 nnnnnttcca cactcnnnnn

20

<210> 28  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (1)..(1)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (2)..(2)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (3)..(3)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (4)..(4)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (5)..(5)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (17)..(17)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (18)..(18)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (19)..(19)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= 1-[2-hydroxy-1-[2-hydroxy-1-(hydroxymethyl)ethoxy]ethylcytosine

<400> 28  
 nnnnnttcca cactcnnnnn

20

<210> 29  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (1)..(1)  
 <223> N= 1-[2-hydroxy-1-[2-hydroxy-1-(hydroxymethyl)ethoxy]ethylcytosine

<220>  
 <221> misc\_feature  
 <222> (2)..(2)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (3)..(3)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (4)..(4)  
 <223> N= 2'-O-MOE G

<220>

<221> misc\_feature  
 <222> (5)..(5)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (17)..(17)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (18)..(18)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (19)..(19)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= 1-[2-hydroxy-1-[2-hydroxy-1-(hydroxymethyl)ethoxy]ethylcytosine

<400> 29  
 nnnnnttcca cactcnnnnn

20

<210> 30  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (1)..(1)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (2)..(2)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (3)..(3)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (4)..(4)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (5)..(5)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (17)..(17)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (18)..(18)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (19)..(19)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= 2',3'-dideoxy-3'-(amino)cytidine

<400> 30  
 nnnnnttcca cactcnnnnn

20

<210> 31  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (1)..(1)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature

<222> (2)..(2)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (3)..(3)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (4)..(4)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (5)..(5)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (17)..(17)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (18)..(18)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (19)..(19)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= 2'-deoxy-3'-S-phenyl-3'-thiocytidine

<400> 31  
 nnnnnttcca cactcnnnnn

20

<210> 32  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (1)..(1)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (2)..(2)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (3)..(3)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (4)..(4)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (5)..(5)  
 <223> N= 2'-O-MOE A

<220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (17)..(17)  
 <223> N= 2'-O-MOE 5meC

<220>  
 <221> misc\_feature  
 <222> (18)..(18)  
 <223> N= 2'-O-MOE G

<220>  
 <221> misc\_feature  
 <222> (19)..(19)  
 <223> N= 2'-O-MOE 5meU

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= 3'-deoxy-2'-S-phenyl-2'-thiocytidine

<400> 32  
 nnnnnttcca cactcnnnnn

20

<210> 33  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>

<223> Completely synthetic sequence

<220>

<221> misc\_feature

<222> (1)..(20)

<223> All P=S

<220>

<221> misc\_feature

<222> (1)..(1)

<223> N= 2'-O-MOE 5meC

<220>

<221> misc\_feature

<222> (2)..(2)

<223> N= 2'-O-MOE 5meU

<220>

<221> misc\_feature

<222> (3)..(3)

<223> N= 2'-O-MOE A

<220>

<221> misc\_feature

<222> (4)..(4)

<223> N= 2'-O-MOE G

<220>

<221> misc\_feature

<222> (5)..(5)

<223> N= 2'-O-MOE A

<220>

<221> misc\_feature

<222> (16)..(16)

<223> N= 2'-O-MOE 5meU

<220>

<221> misc\_feature

<222> (17)..(17)

<223> N= 2'-O-MOE 5meC

<220>

<221> misc\_feature

<222> (18)..(18)

<223> N= 2'-O-MOE G

<220>

<221> misc\_feature

<222> (19)..(19)

<223> N= 2'-O-MOE 5meU

<220>

<221> misc\_feature

<222> (20)..(20)

<223> N= 1[2,3-deoxy-2-N-morpholino  
-B-D-gylcero-pent-2-enofuranosyl]  
cytosine

<400> 33  
 nnnnnttcca cactcnnnnn 20

<210> 34  
 <211> 10  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (5)..(5)  
 <223> 2'-O-hexylguanidinyl-U 5me

<400> 34  
 tttntttttt 10

<210> 35  
 <211> 10  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (5)..(5)  
 <223> N= 2'-deoxy-G-clamp

<400> 35  
 tctcnctctc 10

<210> 36  
 <211> 10  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (5)..(5)  
 <223> N= 2'-deoxy-guanidinyl G-clamp

<400> 36  
 tctcnctctc 10

<210> 37  
 <211> 18  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (9)..(9)  
 <223> N= 2'-deoxy-guanidinyl G- clamp



<400> 37  
ctcgtacct cccggtcc 18

<210> 38  
<211> 10  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (2)..(2)  
<223> N= 2'-deoxy-guanidino G-clamp

<220>  
<221> misc\_feature  
<222> (6)..(6)  
<223> N= 2'-MOE-U 5me

<400> 38  
gngtanacgc 10

<210> 39  
<211> 10  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (6)..(6)  
<223> N= 2'-MOE- U 5me

<220>  
<221> misc\_feature  
<222> (8)..(8)  
<223> N= 2'-deoxy-guanidino G-clamp

<400> 39  
gcgtanangc 10

<210> 40  
<211> 15  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> Completely synthetic sequence

<400> 40  
aaaaagagag ggaga 15

<210> 41  
<211> 10  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (2)..(2)  
<223> N= guanidino G-clamp

<220>  
<221> misc\_feature  
<222> (6)..(6)  
<223> N= 2'-O-methoxyethyl thymine

<400> 41  
gngtanacgc

10

<210> 42  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (1)..(20)  
<223> All P=S

<400> 42  
atgcattctg cccccaagga

20

<210> 43  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (1)..(20)  
<223> All P=S

<220>  
<221> misc\_feature  
<222> (4)..(4)  
<223> N= G-clamp modification

<400> 43  
atgnattctg cccccaagga

20

<210> 44  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (8)..(8)  
 <223> N= G-clamp modification

<400> 44  
 atgcattntg cccccaagga

20

<210> 45  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (11)..(11)  
 <223> N= G-clamp modification

<400> 45  
 atgcattctg nccccaagga

20

<210> 46  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Completely synthetic sequence

<220>  
 <221> misc\_feature  
 <222> (1)..(20)  
 <223> All P=S

<220>  
 <221> misc\_feature  
 <222> (12)..(12)  
 <223> N= G-clamp modification

<400> 46  
 atgcattctg cncccaagga

20

<210> 47  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>

<223> Completely synthetic sequence

<220>

<221> misc\_feature

<222> (1)..(20)

<223> All P=S

<220>

<221> misc\_feature

<222> (13)..(13)

<223> N= G-clamp modification

<400> 47

atgcattctg ccnccaagga

20

<210> 48

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Completely synthetic sequence

<220>

<221> misc\_feature

<222> (1)..(20)

<223> All P=S

<220>

<221> misc\_feature

<222> (14)..(14)

<223> N= G-clamp modification

<400> 48

atgcattctg cccncaagga

20

<210> 49

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Completely synthetic sequence

<220>

<221> misc\_feature

<222> (1)..(20)

<223> All P=S

<220>

<221> misc\_feature

<222> (15)..(15)

<223> N= G-clamp modification

<400> 49

atgcattctg ccccaagga

20

<210> 50

<211> 22

<212> DNA

<213> Artificial Sequence

```

<220>
<223> Completely synthetic sequence

<400> 50
ctagattcca cactctctcg tc 22

<210> 51
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Completely synthetic sequence

<220>
<221> misc_feature
<222> (1)..(1)
<223> N= G-clamp modification

<400> 51
ntagattcca cactctcgtc 20

<210> 52
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Completely synthetic sequence

<220>
<221> misc_feature
<222> (20)..(20)
<223> N= G-clamp modification

<400> 52
ctagattcca cactctcgtn 20

<210> 53
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Completely synthetic sequence

<220>
<221> misc_feature
<222> (1)..(1)
<223> N= G-clamp modification

<220>
<221> misc_feature
<222> (20)..(20)
<223> N= G-clamp modification

<400> 53
ntagattcca cactctcgtn 20

<210> 54
<211> 19

```

<212> DNA  
<213> Artificial Sequence

<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (19)..(19)  
<223> N= phenoxazine

<400> 54  
tttttttttt ttttttttn

19

<210> 55  
<211> 19  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Completely synthetic sequence

<220>  
<221> misc\_feature  
<222> (19)..(19)  
<223> N= G-clamp modification

<400> 55  
tttttttttt ttttttttn

19